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(71) Applicant(s)
Robert Bosch Gmbh
(Incorporated in the Federal Republic of Germany)
Postfach 30 02 20, 70442 Stuttgart,
Federal Republic of Germany

(72) Inventor(s)
Rainer Wirths

(74) Agent and/or Address for Service
Dr Walther Wolff & Co
6 Buckingham Gate, LONDON, SW1E 6JP,
United Kingdom

(54) Abstract Title
**Electric drive device**

(57) A small motorised drive device for a movable functional element (6) in a motor vehicle, especially for a locking mechanism, comprises a two-part drive element (11) drivable by an electric drive motor (10) and an entrainer (12), which transmits the movement of the drive element (11) to the functional element and is coupled with the drive element (11), but not with the functional element. The running motor can be switched off (blocking operation) in a switch-off position of the drive element by blocking the further movement of the drive element in the given movement direction by the functional element, especially by the running of the entrainer (12) against a stop surface at the functional element. In the event of blocking of further movement of the drive element (11) in the given movement direction, blocking of return movement of the drive element (11) opposite to the given direction is also effected, such as by engagement of a displaceable blocking member (15) in an opening (16) in a support (14) supporting the drive element (11). The device can have two such switch-off positions, for which purpose two such openings (16) are present.

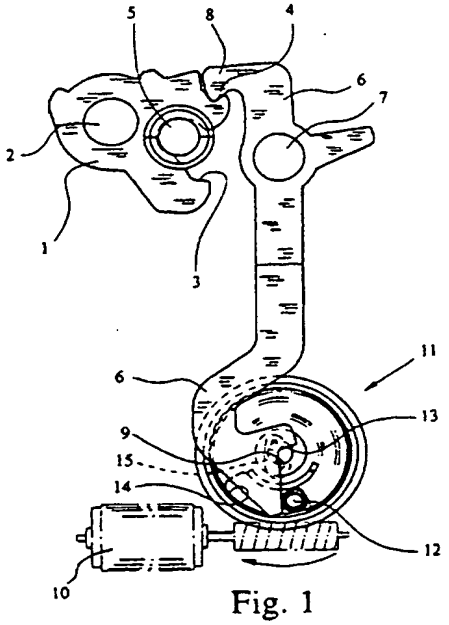


Fig. 1

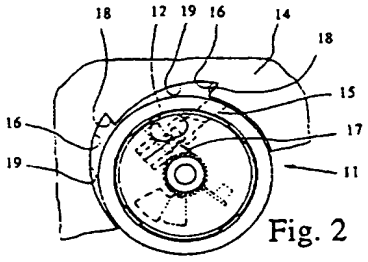


Fig. 2

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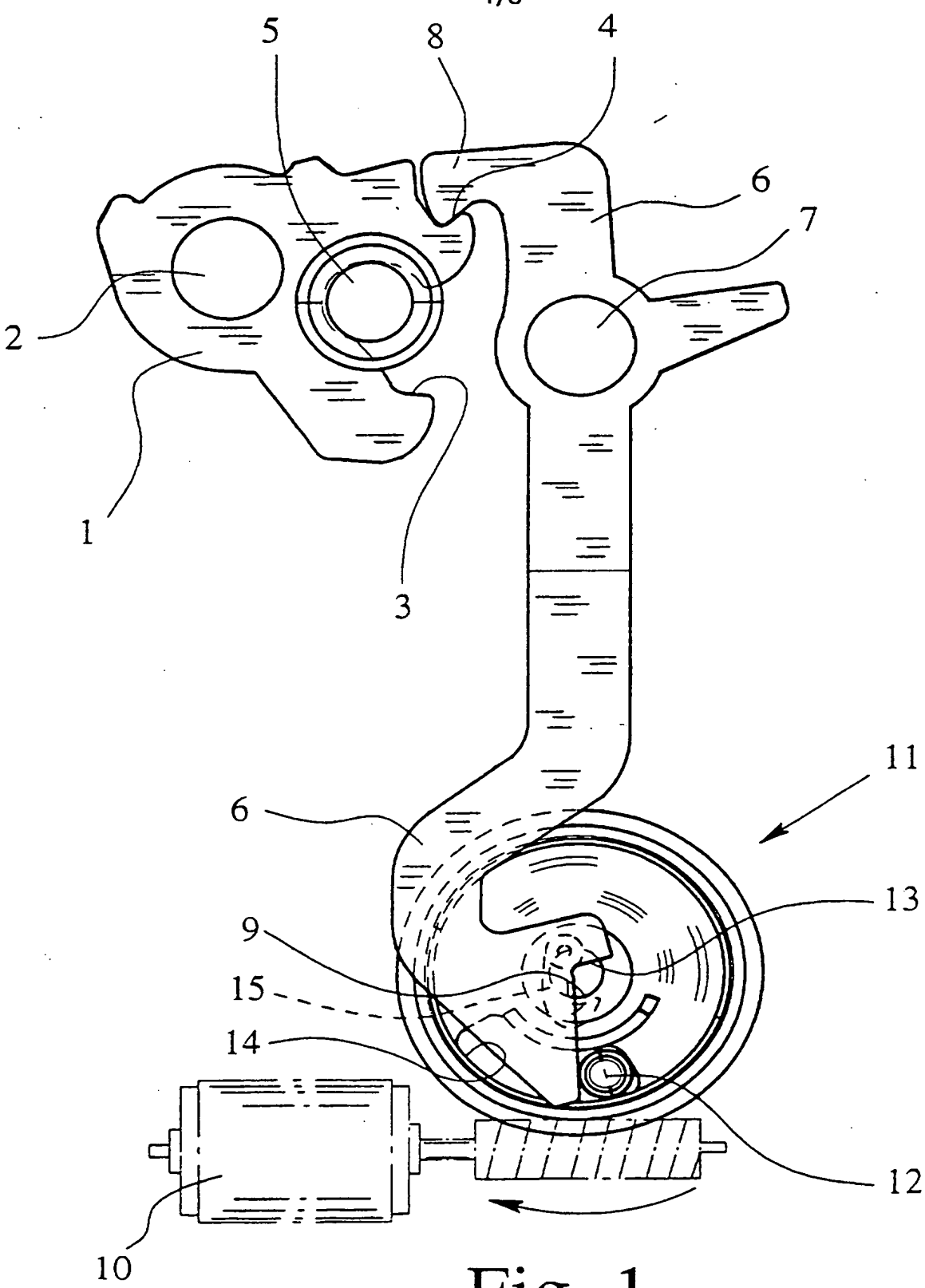


Fig. 1

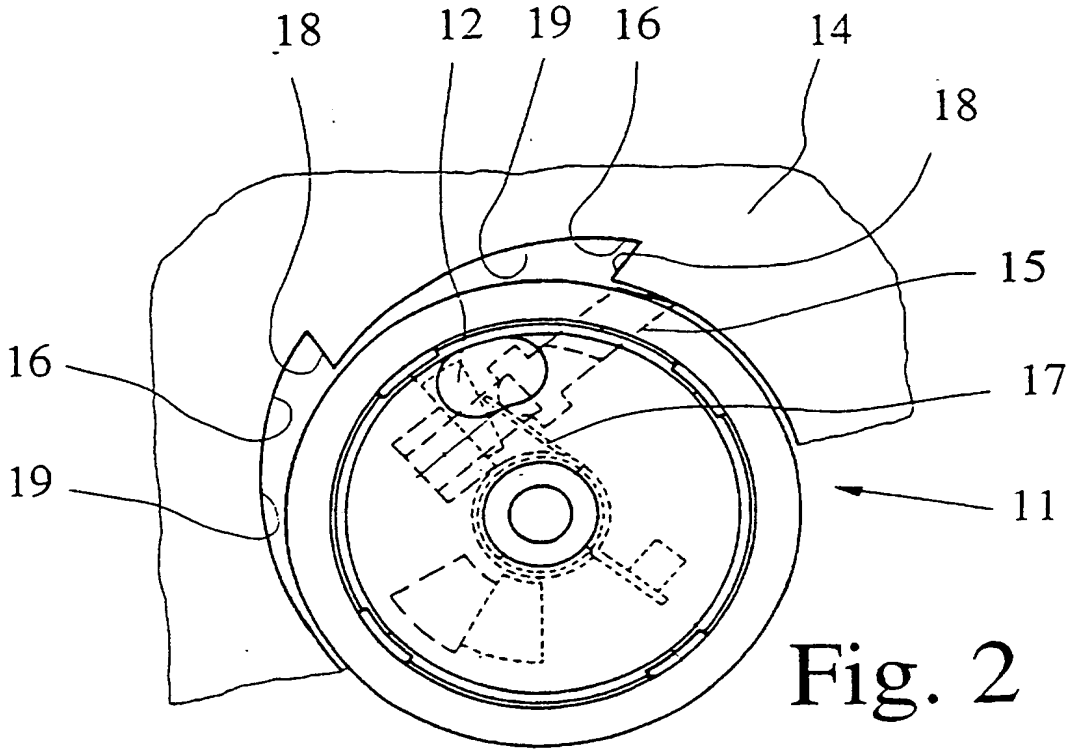


Fig. 2

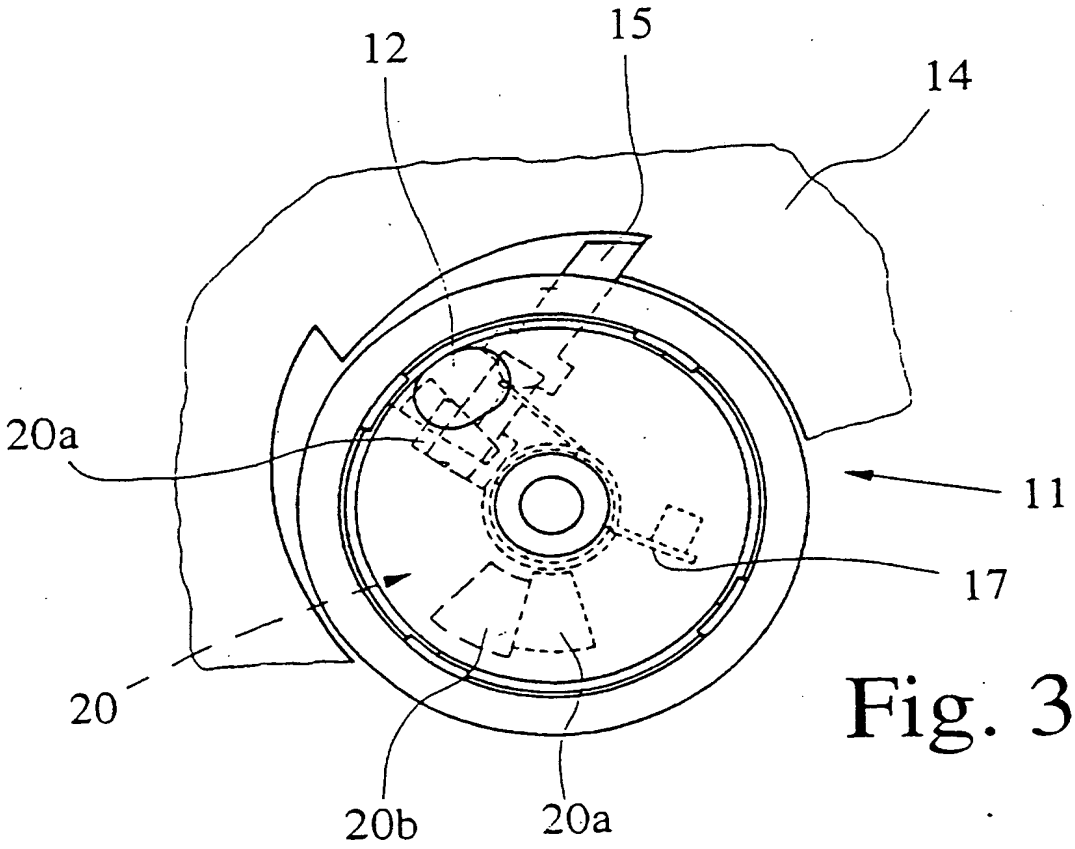


Fig. 3

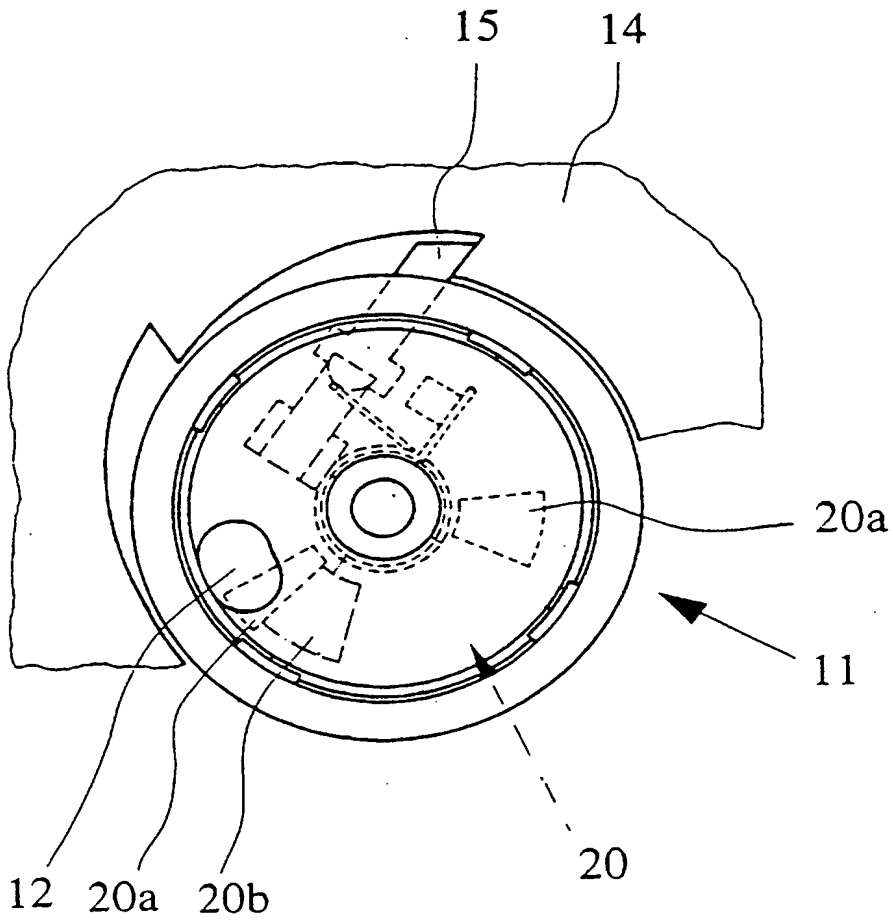


Fig. 4

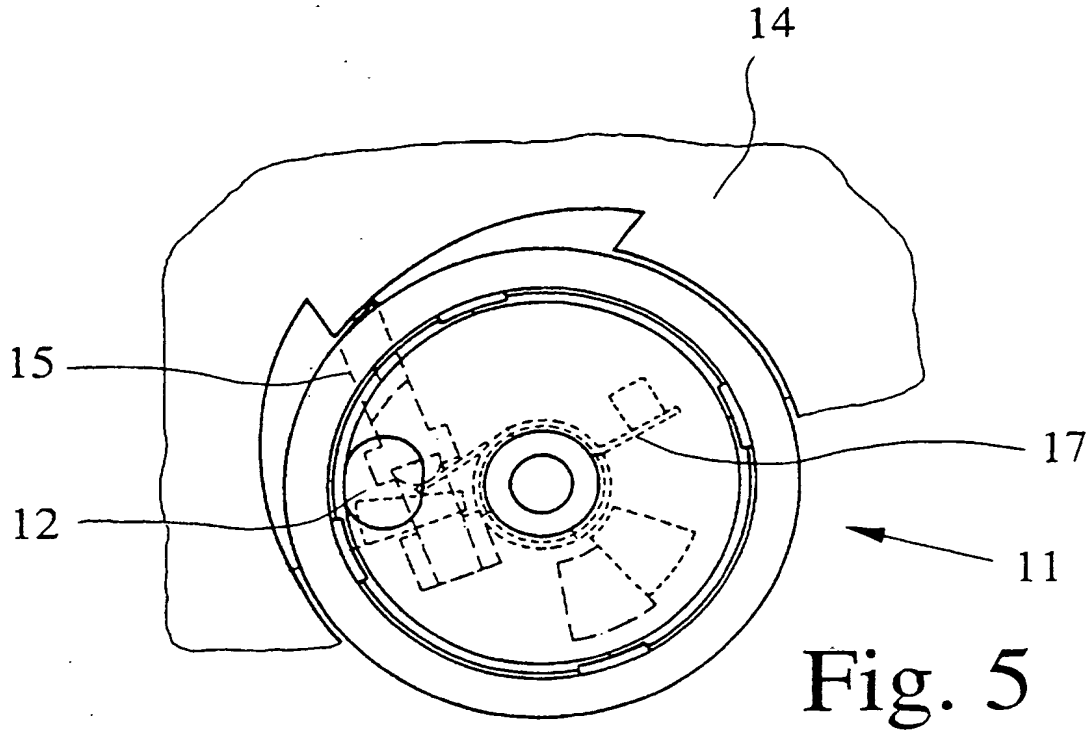


Fig. 5

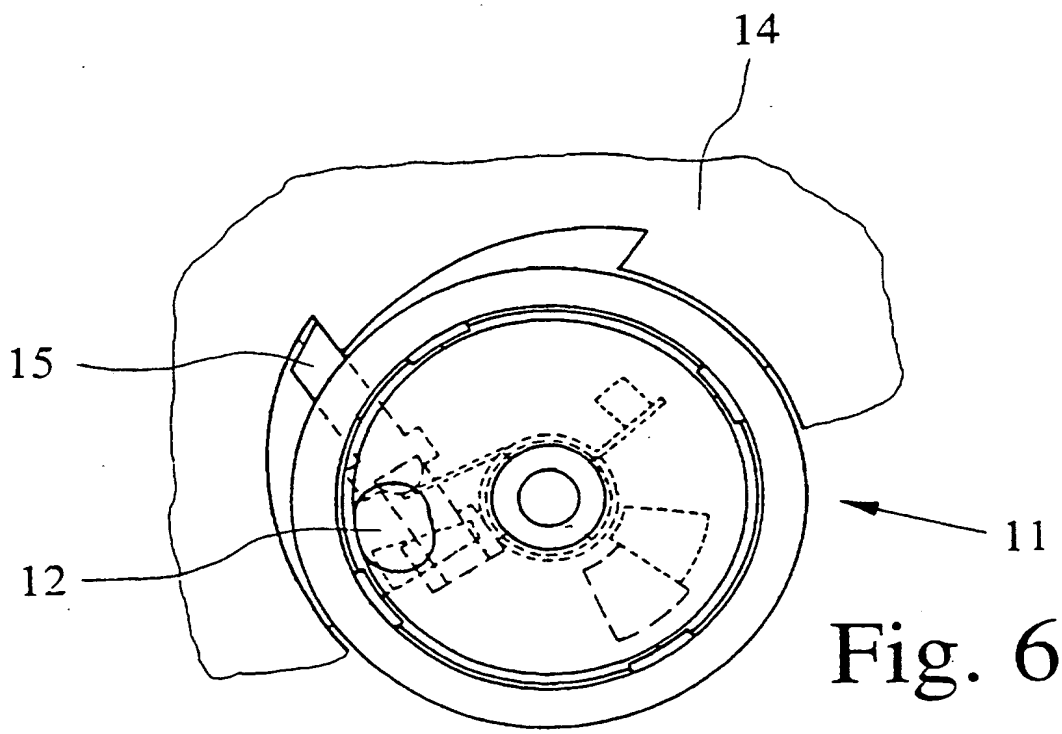


Fig. 6

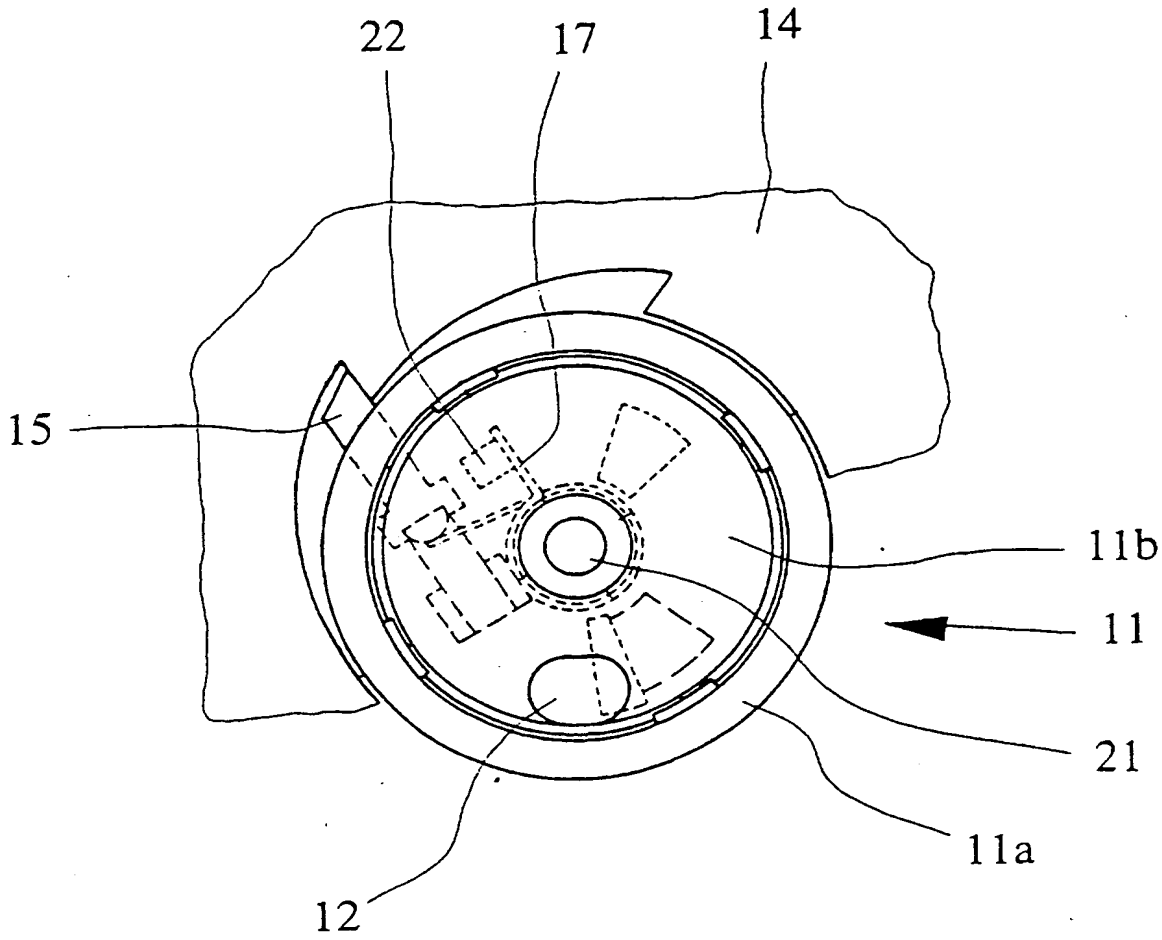


Fig. 7

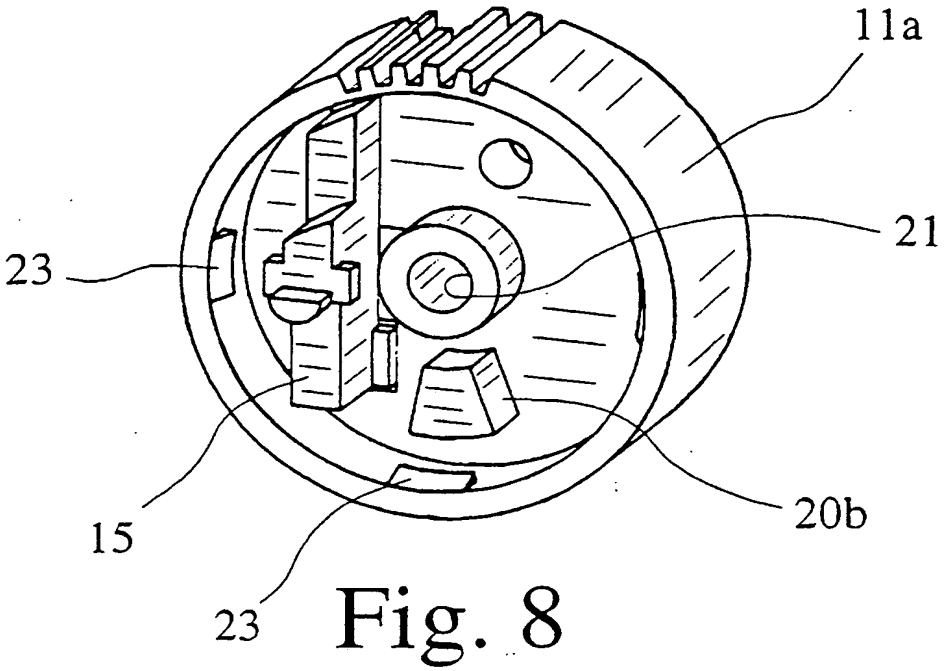


Fig. 8

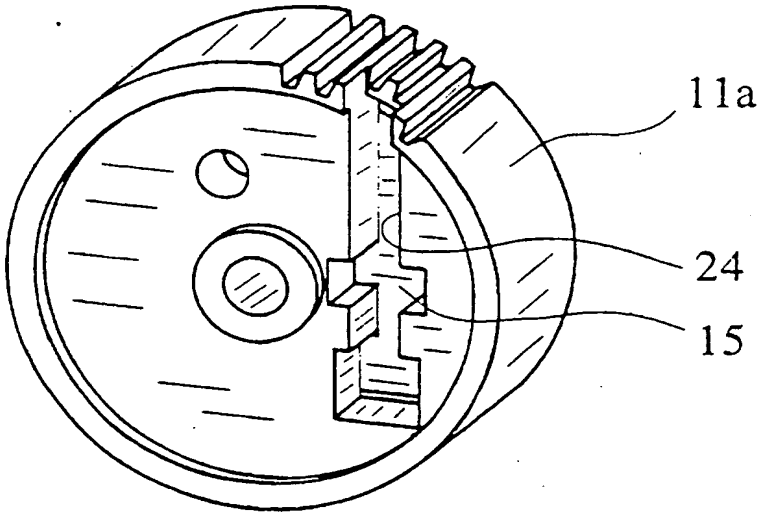


Fig. 9

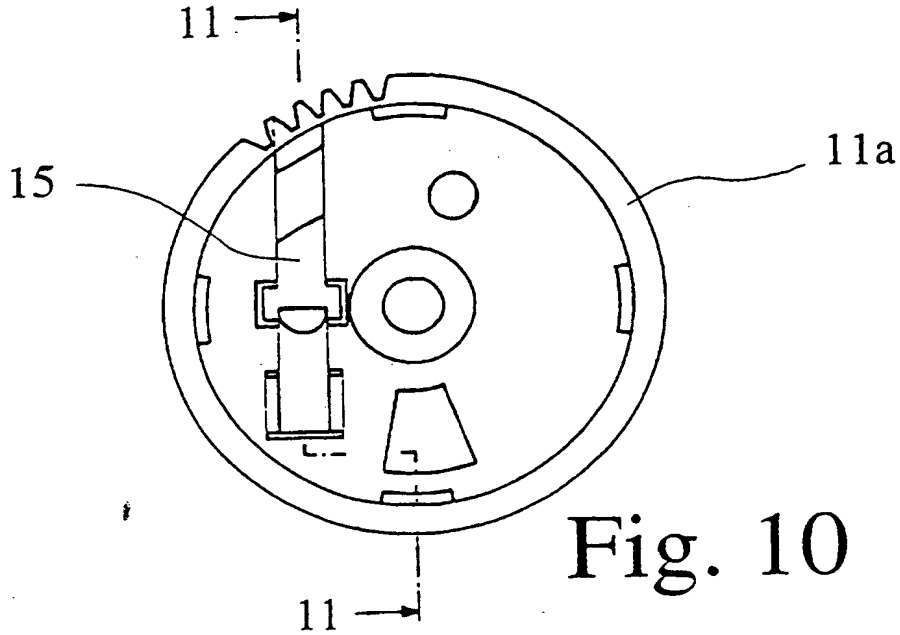


Fig. 10

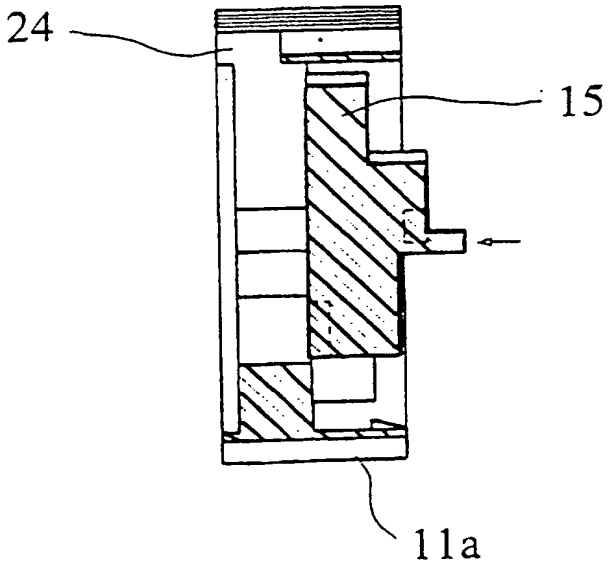


Fig. 11

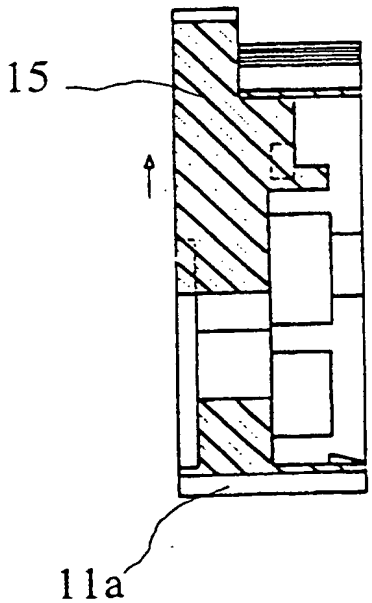


Fig. 12

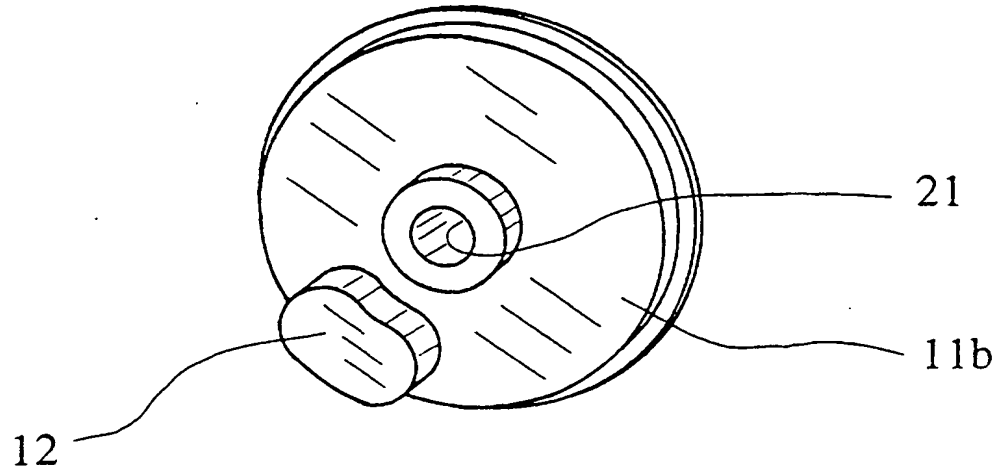


Fig. 13

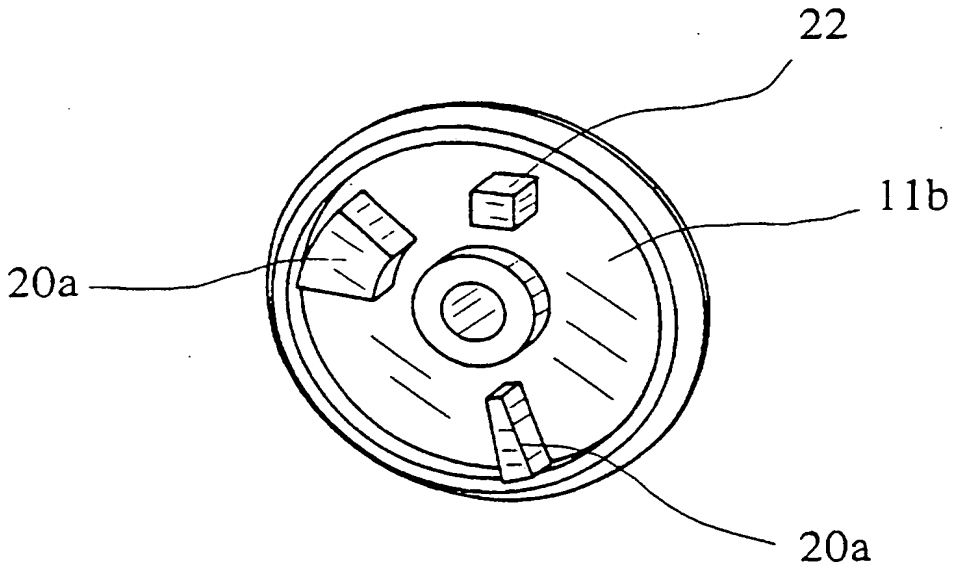


Fig. 14

# DRIVE DEVICE

The present invention relates to a drive device, especially for a movable functional element in a motor vehicle, for example a motor vehicle locking mechanism.

Small motorised drive devices of the usually existing kind are incorporated in motor vehicles in a number of locations and are generally designated "setting elements". Such devices are often used as motor vehicle locking mechanisms, such as tailgate locks. However, the devices are usable with all kinds of motor vehicle locking mechanisms, thus motor vehicle door locks as well as with other kinds of mechanisms in motor vehicles.

A motorised drive device described in DE-A-196 14 122 and used in a motor vehicle tailgate lock serves to move, as a functional element, a pawl which holds a lock catch by means of a detent lug in a preliminary detent or main detent. The drive device includes a rotary drive element, in particular a worm wheel of a worm gear, and is rotatable in only one rotational direction. Through rotation of the drive element in the rotational direction respective to the function, an entrainer runs against an actuating surface of the pawl and lifts the detent lug of the pawl out of the main detent of the lock catch. The pawl has, located behind the actuating surface with respect to the running direction of the entrainer, a stop surface which, when the pawl is lifted out of the main detent, lies in the path of movement of the entrainer and stops this, but when the pawl is disposed in an over stroke setting the stop surface lies outside the movement path of the entrainer and allows this to pass. The drive is switched off (blocking operation) by the running of the entrainer against the stop surface.

In such a drive device the drive element is executed as a rotary element, such as a worm wheel of a worm gear, but other kinds of drive elements, entrainers and functional elements are equally possible, for example screw and nut arrangements, rack and pinion arrangements, etc. In such devices, due to play or inherent resilience of the overall arrangement a return movement of the drive element opposite to the given movement direction can take place, thus a complete self-locking with respect to a return movement is not provided.

In the prior art devices, the electric drive motor is switched off as soon as the entrainer has run against the stop surface (blocking operation). The functional element thus then forms

a more or less fixed abutment for the drive element. The tolerances and possibilities of deformation of the entire arrangement, which are present, determine how the motor is "blocked" with interposition of the gear and how the entire arrangement behaves after switching-off of the current supply of the motor. In the state of the art, the current supply time of the motor is so controlled that a fixed run-on time of, for example, 300 to 500 milliseconds is predetermined. This predetermined run-on time must also take into consideration the most extreme conditions of use.

For controlled switching-off, which is reproducible under all conditions, of the electric drive motor a "hard" blocking operation with small tolerances and small inherent resilience of the overall arrangement would be desirable, whereas the aspects of functional reliability, noise development and wear require tolerances and a minimum degree of inherent resilience of the overall arrangement.

In general, it is difficult to correctly take into consideration under all operating conditions the restoring forces, including recoil effects, that occur due to the given resilience of the arrangement. Despite that it is desirable, indeed in many cases of use necessary, that the drive element reaches and retains the switch-off position as precisely as possible, particularly so as not to impair the further functioning of the drive device for control commands following the switching off.

The problem of mutually opposed objectives of a "hard", on the one hand, and also "soft" (namely resilient), on the other hand, blocking operation is taken into consideration in EP-A-0 684 356. The device described there operates with a spring, which acts in both directions, between drive element and entrainer, and is biassed on running of the entrainer against a stop surface. The spring travel, which is thereby available and which the drive element can still cover when the entrainer is held fast, is used for the switching-off of the drive motor, wherein the spring force then effects resetting of the drive element opposite to the provided movement into the switch-off position defined by the entrainer. It is known, however, that the inertia of the system has the effect that the entrainer in the return movement lifts off the stop surface somewhat and comes to a standstill at a small spacing from the stop surface. In practice, it has proved that the thus defined switch-off position is not sufficiently precisely reproducible and faulty functionings are the consequence.

There is therefore a need for a drive device in which a reproducible switch-off position, which is as precise as possible, of a drive element thereof is attainable in blocking operation.

According to the present invention there is provided a drive device for a movable functional element in a motor vehicle, especially for a motor vehicle locking device, comprising a drive element drivable by an electric drive motor and an entrainer which transmits the force of the drive element to the functional element and which as a rule is coupled with the drive element, but not with the functional element, wherein the running motor can be switched off (blocking operation) in a switch-off position by blocking the further movement of the drive element in the provided movement direction by the functional element, especially by running of the entrainer against an entrainer stop surface at the functional element, characterised in that on occurrence of the blocking of the further movement of the drive element in the provided movement direction also a blocking of a return movement of the drive element opposite to the provided movement direction takes place.

In the case of a drive device which is not self-locking per se with respect to a movement opposite to the provided movement direction, a return movement of the drive element opposite to the provided movement direction is blockable, so-to-speak, in a selective manner. That retains the advantage of no self locking or incomplete self-locking of the drive device, which in certain circumstances is desirable or even necessary, for example for an emergency opening function in a motor vehicle locking device, whilst eliminating this source for poor reproducibility of the switch-off position, but at the instant at which this is required.

The device may be usable in conjunction with all kinds of movable functional elements in a motor vehicle, including the full range of motor vehicle locking devices. Moreover, the device can be realised with various forms of transmitted movement, thus not only with a rotary drive element.

Preferably, in the provided movement direction of the drive element two switch-off positions are provided one behind the other and a blocking of the return movement takes place in both switch-off positions. If so desired, the return movement can be cancelled without further movement of the drive element, preferably after elapsing of a specific delay time.

Expediently, the drive element is mounted at a support and is provided with a movable blocking element, and an engagement opening corresponding to the blocking element is provided at the support, wherein the blocking element on attainment of the switch-off position of the drive element engages in the opening and prevents return movement of the drive element. A movable blocking element is thus integrated into the drive element, so that the number of components of the device is not increased.

Alternatively, the drive element can be mounted at a support and provided with an engagement opening for a movable blocking element, the blocking element being movably mounted at the support and, on attainment of the switch-off position of the drive element, engaging in the opening and preventing the return movement of the drive element.

For preference, the blocking element is biassed in the engagement direction by a spring. In addition, the engagement opening can have a blocking edge, at which adjoins, optionally by way of an intermediate piece, an obliquely extending resetting cam for the blocking element.

The drive element is preferably constructed as a rotary element, for example a worm wheel of a worm gear, and is drivable in only one rotational direction. For preference, the entrainer is movable relative to the drive element over an arc limited to a small angle, the drive element has a cut-out or the like allowing this relative movement of the entrainer and the entrainer is biassed by means of a spring into an end setting leading in rotational direction of the drive element. The drive element can comprise two part elements arranged one behind the other in the direction of its bearing axle, one part element being coupled with the drive motor and the other part element with the entrainer. In that case, the cut-out can be provided on the side of the second part element opposite the entrainer and be formed by abutments which co-operate with a pin disposed therebetween. The part elements of the drive element are preferably connected together by detenting. Moreover, the spring for the blocking element is preferably constructed as a lever spring and biases the entrainer by a lever arm not associated with the blocking element.

In one preferred embodiment, the drive element substantially consists of synthetic, for example plastics, material. In an advantageous method of producing such a drive device the blocking element is injection moulded integrally with the drive element before the final

assembly of the drive element and, in the final assembly of the drive element, is transferrable into its functional setting by separation of frangible locations relative to the drive element. Preferably, the drive element has a guide channel for the blocking element, in which the finally assembled blocking element is radially displaceable, wherein the blocking element is disposed, integrally with the drive element, laterally of the guide channel and in the final assembly the blocking element is transferrable into the guide channel by separation of the frangible locations. The blocking element can be provided with undercuts or lugs, which so correspond with lugs or undercuts at the drive element in the guide channel that the desired guidance of the blocking element is effected by them only in the functional setting.

In an alternative procedure for blocking of the drive element, the functional element is externally fixed in the switch-off position also with respect to the return movement, the functional element or the entrainer is provided with a blocking element and the blocking element, on attainment of the switch-off position couples the entrainer with the functional element and prevents return movement of the entrainer away from the functional element.

An embodiment of the invention will now be more particularly described by way of example with reference to the accompanying drawing, in which:

Fig. 1 is a schematic elevation of a motor vehicle tailgate lock, incorporating a small motorised drive device embodying the invention;

Fig. 2 is an elevation, in section, showing the region of a drive element of the drive device, with the drive element in a setting shortly before reaching a first switch-off position;

Fig. 3 is a view similar to Fig. 2, with the drive element in the first switch-off position;

Fig. 4 is a view similar to Fig. 3, with the drive element still in the first switch-off position, but an entrainer, after release, of the device moved back into its rest setting by a functional element of the lock under spring force;

Figs. 5, 6 and 7 are views similar Figs. 2, 3 and 4, respectively, but for a second switch-off position;

Fig. 8 is a perspective view from the top side of a first part of the drive element before final assembly,

Fig. 9 is a perspective view of the element part of Fig. 8 from the underside;

Fig. 10 is a plan view of the element part of Fig. 8;

Fig. 11 is a sectional view of the element part of Fig. 8 along the line 11-11 of Fig. 10;

Fig. 12 is a view similar to Fig. 11, but showing the element part after final assembly;

Fig. 13 is a perspective view of a second part of the drive element from an outer side of that part; and

Fig. 14 is a perspective view of the second element part from an inner side thereof, which faces the first element part.

Referring now to the drawings, there is shown in Fig. 1, by way of example, a small motorised drive device for a movable functional element in a motor vehicle, in particular of a motor vehicle locking mechanism, such as a tailgate lock. The device is not, however, limited to such use.

The illustrated tailgate lock comprises a catch 1 displaceable from an open setting into a preliminary detent setting and into a main detent setting, and conversely. The catch 1, in this instance a rotary catch, is rotatably mounted on a bearing axle 2 and has a preliminary detent 3 and a main detent 4. In the illustrated lock, a pin 5 of a lock block is received between the forked limbs of the catch 1, the catch then being disposed in locked setting.

Further provided is a functional element in the form of a double-armed pawl 6 holding the catch 1 in the preliminary detent setting and main detent setting. The pawl 6 is mounted

on a bearing axle 7 and is loaded in tension. The pawl 6 has a detent lug 8, by which it holds, standing in engagement with the main detent 4, the catch 1 in locked setting. The pawl 6 also has an actuating surface 9.

A motorised drive with an electric drive motor 10 and a two-part drive element 11 drivable by the motor are provided. In the illustrated embodiment, the drive element 11 is the worm wheel of a worm gear, which is convenient for explanation and also widely popular, but other forms of transmission are equally possible.

The drive element 11 is provided with an entrainer 12 which transmits the movement of the drive element to the functional element, thus the pawl 6, which is normally coupled with the drive element 11, but not with the functional element 6. There are also constructions which provide a fixed coupling, which is possible as an alternative.

In the illustrated embodiment the entrainer 12 runs, in the given movement direction (curved arrow in Fig. 1), against the actuating surface 9 of the pawl 6 and thereby lifts the detent lug 8 out of the main detent 4 of the catch 1. In addition thereto, an entrainer stop surface 13, which defines a switch-off position for the motor 10, is disposed behind the actuating surface 9 with respect to the given movement direction. Through blocking of the further movement of the drive element 11 in the given direction of movement by the stationary pawl 6, thus by running of the entrainer 12 against the surface 13, the running motor 10 is switched off (blocking operation). The characteristics of this switching-off and the characteristics of a "hard" or a "soft" blocking operation were mentioned in the introduction. The switch-off position must be maintained to be reproducible as precisely as possible without the drive device having complete self-locking.

It is further to be explained that the embodiment illustrated in Fig. 1 indeed has a preliminary detent 3 and main detent 4, but the drive device itself has the afore-described function only for the main detent 4, not for the preliminary detent 3. It can be visualised, without further details, how the functional sequences for the main detent 4 in a catch 1, which is not opening further, could be repeated for the preliminary detent 3, especially if the mechanical automatic control of the arrangement in the region of the preliminary detent 3, which is substantially the subject of the prior-published document discussed in the introduction, is not realised.

Fig. 2 shows a drive element 11, which is modified for functions not only with the preliminary detent, but also with the main detent, of a drive device. The functional sequence is shown in Figs. 2 to 7.

On occurrence of blocking of further movement of the drive element 11 in the given movement direction, there also takes place a blocking of return movement of the drive element 11 against the given direction. Thus, the switch-off position is accurately reproducible, because recoil, which arises due to tolerances and inherent resilience, against the movement direction is prevented.

The tolerances, which are present, for the blocking of the return movement are thus so adapted that maintenance of the switch-off position takes place likewise with the desired tolerances.

The illustrated embodiment shows two switch-off positions, thus in the given movement direction of the drive element 11 two switch-off positions are provided one behind the other and a blocking of return movement takes place in both switch-off positions.

In the case of a drive element 11 movable in only one movement direction, thus in only one rotational direction (disregarding the return movement possible due to absent or small self-locking), a permanent blocking of the return movement of the drive element 11 against the given movement direction can be provided. However, it is also possible to provide for the blocking of the return movement to be cancelled without further movement of the drive element, preferably after a specific time period. That may require, however, a greater technical complexity, which is not desired in most cases. Various constructional measures can be used for blocking of the return movement, for which reason the following example is merely illustrative.

Figs. 2 to 7 show a version in which the drive element 11 is mounted at a support 14 and provided with a movable blocking element 15. An engagement opening 16 corresponding to the blocking element 15 is provided at the support 14. On attainment of the switch-off position of the drive element 11, the blocking element 15 engages in the opening 16 and prevents return movement of the drive element 11.

In a kinematically reversed arrangement, the blocking element 15 is provided at the support 14 and the engagement opening 16 at the drive element 11. In the case of two switch-off positions either two blocking elements 15 have to be disposed at the support 14 or two engagement openings 16 at the drive element 11.

The illustrated embodiment further shows that the blocking element 15, which here is arranged in the drive element 11, is biassed in the engagement direction by a spring 17. There can be recognised, in the transition from Fig. 2 to Fig. 3, how on attainment of the first switch-off position the blocking element 15 snaps radially outwardly into the opening 16 under the force of the spring 17 and thereby prevents a return movement, in this case a return rotation of the drive element 11 in clockwise sense.

As illustrated, the opening 16 has a blocking edge 18 adjoined by an obliquely extending resetting cam 19 for the blocking element 15. Optionally, an intermediate piece could adjoin the blocking edge 18 before the cam 19 begins. The resetting cam 19 runs curvilinearly at an inclination up to the radially inner end of the blocking edge 18 of the next engagement opening 16 for the second switch-off position. With this course of the cam 19 it is achieved that the blocking element 15 can be pushed back with low friction against the force of the spring 17 in the drive element 11 until the second switch-off position is reached.

Substantial significance attaches to the design of the edges and cams, for example the not entirely coincident form of the end face of the blocking element 15 with respect to the form of the cam 19 at the support 14. The different angle setting, which is selected there and illustrated in the drawing, causes a small friction during rotation of the drive element 11 due to the additional blocking element 15 and thus an only insubstantial increase in the energy consumption relative to a drive element 11 not provided with a blocking element 15.

On passing from Fig. 3 to Fig. 4, it can be recognised that the entrainer 12 has moved relative to the drive element 11 over a limited arc, in particular an angle of about 70 to 90°. This corresponds to the movement of the entrainer 12 in the case of the over stroke of the pawl 6 (release of the entrainer 12). The drive element 11 allows this relative movement of the entrainer 12 over a defined arc and realises the limitation by a cut-out 20 or the like, which is formed by abutments 20a and a pin 20b disposed therebetween. The entrainer

12 is biassed into the end setting leading in the given movement direction of a drive element 11, as is seen in Fig. 4, by means of a spring, which in the illustrated embodiment is the spring 17 of the blocking element 15 so that a further spring does not have to be incorporated. Due to the blocking effect of the pawl 6, the entrainer 12 is, in Fig. 3, pressed back against the action of the force of the spring 17, so that the abutment 20a bears against the pin 20b from the right. Thereagainst, the other abutment 20a in Fig. 4 bears against the pin 20b from the left.

Figs. 5, 6 and 7 show the corresponding sequence for the second switch-off position, so that further explanation is not necessary. After release of the pawl 6 as illustrated in Fig. 7 the movement of the entrainer pin 12 follows into the leading end setting illustrated in Fig. 7, from which the drive element 11 can then return without further measures back to a start setting or rest setting between the position of Fig. 7 and the position of Fig. 2. In principle, Fig. 7 itself could represent the rest setting, from which a new opening process can be started when the motor vehicle locking device has been brought back into the closed state.

Figs. 8 to 14 show constructional details of the drive element 11. Figs. 2 to 7 show that the drive element 11 has two part elements arranged one behind the other in the direction of its bearing axle 21 (Fig. 8), wherein the first part element 11a illustrated in Figs. 8 and 9 forms the actual drive element 11 and is fixedly coupled with the drive motor 10, whilst the second part element 11b carries the entrainer 12. The first part element 11a could be closed, in which case the cut-out 20 would be arranged therein and the entrainer 12 would protrude from the inside through the cut-out 20. The illustrated embodiment shows another concept, which is characterised in that the parts 11a and 11b of the drive element 11 are connected together by detenting and that the cut-out 20 is arranged on the side of the second part element 11b opposite to the entrainer 12 and is formed by the abutments 20a at the second part element 11b. These abutments co-operate with the pin 20b, which is disposed therebetween, at the first part element 11a and in particular as is illustrated in Figs. 2 to 7.

The co-operation of the lever of the spring 17, which is constructed as a lever spring, with the blocking element 15 on the one hand and with the second part element 11b, which carries the entrainer 12, on the other hand can be recognised from Figs. 2 to 7. The corresponding support block 22 at the second part element 11b, which carries the entrainer 12, can be recognised clearly in both Fig. 7 and Fig. 14.

The drive element 11, with exception of the spring 17, preferably consists entirely of synthetic, preferably plastics material, thus the two part elements 11a and 11b consist of synthetic material in the illustrated embodiment. That is of great advantage for production engineering, with respect to both weight and cost. In that case, the synthetic material of the two part elements 11a and 11b does not necessarily have to be identical. The inherent resilience of synthetic material permits the previously discussed detenting of the two part elements 11a and 11b without further measures. Fig. 8 shows detent lugs 23 at the first part element 11a, which in the installed state grip behind an encircling edge of the second part element 11b.

The production of the drive element 11 and in particular the part element 11a thereof from synthetic material offers a further advantageous possibility in terms of production engineering, as more closely explained in connection with Figs. 8 to 12. Through appropriate arrangement and design of the drive element 11, the blocking element 15 together with the first part element 11a of the drive element 11 can be injection-moulded in common. For that purpose it is basically provided that the blocking element 15, before the final assembly of the drive element 11, is integrally injection-moulded with the part element 11a from synthetic material and so arranged that, on final assembly, it can be transferred into its operational setting, in which it is then movable relative to the drive element 11, by separation of frangible locations at the drive element 11.

In the illustrated embodiment this result is achieved in that the first part element 11a has a guide channel 24 for the blocking element 15, in which the finally assembled blocking element 15 is radially displaceable, and that the blocking element 15 before the final assembly is disposed laterally of the guide channel 24 and injection-moulded integrally with the drive element 11. In the final assembly the blocking element 15 can be transferred from its position laterally of the guide channel 24 and into a position in the guide channel 24 by separation of the frangible locations at the drive element 11.

Figs. 8 to 10 show the first part element 11a with the still integrally injection-moulded blocking element 15, thus before the final assembly. Fig. 9 shows the guide channel 24, in the background of which the blocking element 15, which is still injection-moulded in place, can be recognised. Fig. 11 shows, by sectional illustration, the position of the blocking element 15 at this point in time. Fig. 12 shows the position of the blocking element 15

after the final assembly. It can be recognised in Fig. 12 that the blocking element 15 has been pressed in to the left (arrow) relative to Fig. 11 and is now disposed in the guide channel 24. In this channel, the radial movement of the blocking element, which is indicated by the arrow in Fig. 12 and which serves for the blocking function, is possible.

The illustrated embodiment moreover shows that the blocking element 15 is provided with undercuts or lugs, which correspond with lugs or undercuts at the part element 11a in the guide channel 24 and, in fact, in such a manner that the desired guidance into the operational setting of the blocking element 15 is effected by it.

An alternative embodiment is indicated by dashed lines in Fig. 1. In this alternative, the avoidance of restoring movement takes place in that the pawl 6 in the switch-off position is externally fixed also with respect to return movement and is provided with the blocking element 15. On attainment of the switch-off position, the blocking element 15 couples the entrainer 12 with the pawl 6 and thus prevents return movement of the entrainer relative to the pawl. It is also possible for the entrainer 12 to be provided with the blocking element 15 which then connects with the pawl 6, so-to-speak "captures" this, in order to prevent recoil. In Fig. 1 the blocking element 15 is represented as a catch hook at the pawl 6.

## CLAIMS

1. A drive device comprising a drive element drivable by an electric motor for movement in a given direction, the drive element being blockable in a motor switch-off setting of the element against further movement in the given direction, an entraining member for transmitting movement of the drive element to a movable functional element to be moved by the device, and blocking means effective in the switch-off setting to block return movement of the drive element in a direction opposite to the given direction.

2. A device as claimed in claim 1, wherein the entraining member is coupled to the drive element.

3. A device as claimed in claim 1 or claim 2, wherein the drive element is blockable against further movement in the given direction by contact of the entraining member with a stop surface.

4. A device as claimed in any one of the preceding claims, wherein the drive element is blockable against further movement in the given direction in each of two such switch-off settings disposed one after the other in the given direction, the blocking means being effective in both such settings.

5. A device as claimed in any one of the preceding claims, comprising means to cancel the blocking effect of the blocking means without further movement of the drive element.

6. A device as claimed in claim 5, wherein the means to cancel is arranged to cancel the blocking effect of the blocking means after elapsing of a predetermined time period.

7. A device as claimed in any one of the preceding claims, wherein the drive element is movably mounted on support means and the blocking means is provided by an engagement opening in the support means and a movable blocking member at the drive element, the blocking member being engageable in the opening to block return movement of the drive element.

8. A device as claimed in any one of claims 1 to 6, wherein the drive element is movably mounted on support means and the blocking means is provided by an engagement opening in the drive element and a movable blocking member at the support means, the blocking member being engageable in the opening to block return movement of the drive element.

9. A device as claimed in claim 7 or claim 8, comprising spring means biassing the blocking member in the direction of engagement in the opening.

10. A device as claimed in any one of claims 7 to 9, wherein the engagement opening has a blocking edge and an adjacent cam surface for resetting the blocking member.

11. A device as claimed in claim 10, wherein the cam surface adjoins the blocking edge by way of an intermediate surface.

12. A device as claimed in any one of the preceding claims, wherein the drive element is a rotary element and is drivable by the motor in only one rotational direction.

13. A device as claimed in claim 12, wherein the drive element comprises a worm wheel co-operable with a worm drive.

14. A device as claimed in claim 12 or claim 13, wherein the entraining member is movable relative to the drive element through a predetermined limited angle between two end settings respectively leading and trailing in the given rotational direction, the drive element being provided with defining means defining the limited angle and the entraining member being biassed into the leading end setting.

15. A device as claimed in claim 14, wherein the drive element is mounted on a bearing axle and comprises a first part coupled to the motor and a second part coupled to the entraining member, the two parts being arranged one after the other on the axle.

16. A device as claimed in claim 15, wherein the defining means is provided on a side of the second part remote from the entraining member and comprises two abutments co-operable with a pin disposed therebetween.

17. A device as claimed in claim 15 or claim 16, wherein the first and second parts are connected together by detent means.

18. A device as claimed in any one of claims 14 to 17 when appended to claim 9, wherein the spring means comprises an arm biassing the blocking member and an arm biassing the entraining member.

19. A device as claimed in any one of the preceding claims, wherein the drive element substantially comprises plastics material.

20. A device as claimed in any one of claims 1 to 6, comprising means for securing such functional element against a return movement when the drive element is in the or each switch-off setting thereof, the blocking means being provided by a blocking member arranged to couple the entraining member to the functional element on attainment of the or each switch-off position and to prevent return movement of the entraining member away from the functional element.

21. A drive device substantially as hereinbefore described with reference to the accompanying drawings.

22. A motor vehicle locking mechanism comprising a device as claimed in any of the preceding claims and a functional element movable by the device and arranged to actuate locking means of the mechanism.

23. A locking mechanism substantially as hereinbefore described with reference to the accompanying drawings.

24. A method of making a device as claimed in claim 7, comprising the steps of integrally moulding the drive element and blocking member of plastics material such that the blocking element is connected with the drive element by frangible connecting means and is displaced out of a predetermined functional relationship to the drive element, breaking the connecting means and moving the blocking member into said functional relationship.